Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_

**Cell Specialization Lab**

Ms. Ottolini, PreAP Biology

***Directions:*** *Multicellular organisms have specialized cells and tissues (groups of similar cells) that perform particular functions in their bodies. Specialized cells differ in their structure, which determines their function. They differ in three aspects of structure—shape, size, and organelle content. (Note: By organelle content, I mean that cells have a high percentage of certain organelles that will contribute to their function. For example, muscle cells have many mitochondria because they have a high energy requirement).*

*Today, you will be viewing several different types of specialized cells in animals and plants (both multicellular organisms) on microscope slides. You will be able to determine, with the assistance of additional images and information on a laminated card, how the structure of each cell type contributes to its function. For each cell, you will provide information about the structure and function of the cell, draw a picture of the cell, and identify features seen in the picture. You will also record the total magnification under which you are viewing the specimen. In order to determine the total magnification, you must multiply the magnification of the ocular lens (always 10) by the magnification of the objective lens (4 for scanning, 10 for low power, and 40 for high power).*

**Portion of your Unit 3 Map that Relates to this Lab:**

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| **Objective** | **Specific Learning Target** |
| 4. You will be able to explain how the specialization of cells to perform particular functions in multicellular organisms contributes to the efficiency of life processes within these organisms. | c. You will be able to identify examples of specialized cells in multicellular organisms and describe structural differences between various kinds of specialized cells that give them their unique functions within organisms. |

**Your Data:**

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| --- |
| **Station #1 – Nerve (contains nerve cells)**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide?  **Station #2 – Blood Smear (contains red blood cells)**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |
| **Station #3 – Sperm Cell**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide?  **Station #4 – Muscle Tissue (contains muscle cells)**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |
| **Station #5 – Bone Tissue (contains bone cells)**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |
| **Station #6 – Epithelial (Skin) Tissue (contains skin cells)**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |
| **Station #7 – Small Intestine Cells**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |
| **Station #8 – Plant Leaf Cells**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |
| **Station #9 – Plant Stem Cells**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |
| **Station #10 – Plant Root Cells**  1. Using the information and images given on the laminated card, explain how the **structure** of this cell relates to its **function**. You must discuss at least two aspects of the cell’s structure.  2. Now, view the cell underneath the microscope. What is the total magnification under which you are viewing the cell?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. Draw an image of what you see under the microscope in the space below. You do not need to use color, as most of these cells have been stained.  4. What structural features from the laminated card were you able to see on the slide? |